



IOWA

PROFILES IN soil health

Frederick Martens

Winterset, Iowa

1,300 acres

Crops: corn, soybeans, alfalfa, pasture

Planting: no-till, vertical tillage

Covers: cereal rye, oats, radishes



New Conservation Practices for Century Old Farm.

Even though Frederick Martens' grandfather started farming his Madison County ground more than a century ago, Martens continues to implement the latest in conservation technology to sustain the family farm for at least 100 more years.

Martens operates the 1,300-acre farm on his own after his father retired following the 2015 harvest. His operation includes a corn, soybeans and hay rotation. He also leases 300 acres of pasture on the western edge and headwaters of the Badger Creek Watershed.

Martens and his father, who goes by the same name, have worked closely with USDA's Natural Resources Conservation Service (NRCS) and state and local conservation groups the past several years to apply

practices that will reduce sediment runoff and nutrient loading to Badger Creek Lake.

Badger Creek Lake is listed on the Iowa Department of Natural Resources' (DNR) 303(d) list of impaired waters due to excessive siltation and nutrient loading. "When Badger Creek was added to the impaired waters list, I felt bad," said Martens. "This is a Century Farm and I want to keep it up as good or better as I inherited it, and in good shape for the watershed, too."

CREP Wetland

After building terraces and reducing cropland tillage to help reduce soil erosion, Martens' father took on a major project to help water quality – adding a Conservation Reserve Enhancement Program (CREP) wetland to existing pasture land in 2011. Iowa CREP is available through USDA Farm Service Agency in partnership with the Iowa Department of Agriculture and Land Stewardship and 37 soil and water conservation districts throughout central and north central Iowa.

The CREP wetland is strategically located and designed to remove nitrate from subsurface tile-drainage water flow. "It is the perfect location for a wetland because it helps denitrify water flowing from nearly 700 cropland acres around it at the headwaters of the watershed," said Badger Creek Lake Watershed Project Coordinator Anna MacDonald.

NWQI Funding

A year after the Martens family installed the wetland NRCS selected Badger Creek Watershed as one of five Iowa watersheds to be part of the National Water Quality Initiative (NWQI). Martens viewed it as an opportunity to try some new approaches to soil and water conservation.

"Our family has farmed here for more than 100 years, and the rainfall events the last few years have been stronger and harder than I ever remember," he said. "We had gullies showing up in places we had never seen them before."

In 2013, Martens added 6,900 feet of terraces with assistance through NWQI. He said the farm now has more than 20,000 feet of terraces, which reduce erosion by shortening slope length and defining the contour for row-cropping. "We have about all of our hilly areas lined with terraces now," said Martens.

Cover Crops

To provide even more protection from erosion, MacDonald recommended Martens add cover crops to his farm's suite of practices. Cover crops such as cereal rye, oats and radishes can be planted to temporarily protect the soil from erosion and supply living roots to the soil during times when cropland is often not adequately protected.

Martens took a conservative approach by planting 58 cover crop acres his first year. By the second year he planted 87 acres, and in 2016 he seeded a total of 150 acres of cover crops. "This year I aerial-applied cereal rye and radishes into corn, and oats with radishes and turnips into soybeans," he said.

"I'm anxious to see the organic matter content in these fields once they are sampled to see if there is an



To help protect the Badger Creek Lake Watershed, Project Coordinator Anna MacDonald recruits farmers like Martens to voluntarily implement practices that help

increase," continued Martens. "I also don't see many weeds in my fields with cover crops, so I think they do a good job controlling winter annuals, if not more."

Martens is just one of a couple dozen farmers in the watershed who have tried cover crops, along with many other practices to protect the water quality through USDA's NWQI funding.

MacDonald says the project goal is to reduce sediment and phosphorus from leaving the land and entering the lake. "We have been promoting cover crops because they go hand-in-hand with other practices such as no-till and reduced tillage, terraces, and grassed waterways," she says. "However, Like those practices, cover crops can help prevent erosion, but it's the additional benefits like retaining nutrients, building soil tilth, and providing forage for livestock that really make cover crops a win-win practice for farmers and the lake."

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